IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of **Suzuki, et al.** Confirmation No.: 6889

Appln. No. 09/273,256 Group Art Unit: 2123

Filed: March 22, 1999 Examiner: Craig, Dwin M.

FOR: **APPARATUS AND METHOD FOR AIDING PROGRAMMING**

SUPPLEMENTAL DECLARATION UNDER 37 CFR § 1.131

Hon. Commissioner for Patents
Alexandria, VA 22313

Sir:

We, Kenji Suzuki, Toshiyuki Muraki, Makoto Tanahashi, and Hirokazu Yoshida, hereby declare and state as follows:

1. This Declaration is submitted as evidence that the subject matter claimed in the above-identified application was invented by the present inventors prior to February 27, 1998, and diligently reduced to practice. This Declaration supplements the Declarations that we executed on July 7 and July 8, 2003, which we understand were submitted to the U.S. Patent and Trademark Office.

2. We are the persons named as the inventors of the above-identified application.

3. We are able to understand written English. We have reviewed the present claims 1-21.

4. We are employed by Yamazaki Mazak Kabushiki Kaisha (hereafter "Mazak"), a corporation organized under the laws of Japan, having a principal place of business at 1, Aza-Norifune, Ohaza-Oguchi, Ohguchi-cho, Niwa-gun, Aichi-ken 480-0197 Japan.

5. At Mazak, we were jointly working on the development of an apparatus and method of aiding programming, particularly numerically controlled machine tools. Within the scope of our

duties at Mazak, we jointly invented the subject matter disclosed and claimed in the above-identified U.S. Patent application.

6. We jointly conceived of the invention claimed in at least present claims 1-4 and 7-12 at least as early as October 8, 1997. This is demonstrated by the supplemental materials provided herewith. Conception of limitations recited in such claims is demonstrated by the tables and flowcharts contained in Exhibit B, which includes 4 Tables, of which Tables A-C are shown on page 1 and Table D on page 2 of the Exhibit B, and 4 Flowcharts A-D shown on pages 3-6 of Exhibit B. In the discussion that follows, limitations in thee claims are individually mapped to corresponding Flowcharts and Tables in Exhibit B.

The Tables and Flowcharts shown in Exhibit B directly correspond to Figs. 4 to 11(b) in the present U.S. Patent application as well as the corresponding Japanese application. These Tables and Flowcharts support the limitations claimed in pending claim 1. Particularly, they support the following limitations:

> an analyzing means for analyzing the variable values obtained during the execution of the basic program to determine the efficiency of the machining process; and
>
> a notifying means for notifying the machinist an advisory message regarding how to improve the basic program to generate a final machining program that enables the machining process to perform at the highest speed allowed by the capacity of the machine based on the analysis performed by the analyzing means so that the final machining program is generated by improving the basic program according to the advisory message.

A person of ordinary skill in the art also would find support in Exhibit B for additional subject matter recited by pending claim 1.

7. Table A of Exhibit B describes conditions under which different advisory messages are displayed during a drilling machining process. Flowchart A describes a processing flow for a drill tool. Flowchart A corresponds directly to Fig. 4 in the present application, showing a procedure for analyzing the machining variable values obtained during the execution of a basic program to determine the efficiency of the machining process and for reporting. As indicated on the upper left corner of the flowchart, the procedure illustrated in Flowchart A is applied to a

drilling machining process. The processing described in Fig. 4 (and in Flowchart A) is consistent with the conditions prescribed in Table A. Based on the analysis, an advisory message is determined, which is used for notification of the machinist. In the procedure shown in Flowchart A, the spindle load and the cutting speed, which are machining variable values as recited in claims 7 and 8, are analyzed. Specifically, each of the spindle load and the cutting speed is compared with a corresponding criterion (SF, WJ, as described in Table A) to determine whether or not the machining efficiency can be improved. This feature is recited in claim 2. If the machining efficiency can be improved, an advisory message is displayed. This feature is also recited in claim 2. As shown in Flowchart A, depending on the cutting speed, an appropriate advisory message, designated as either navigation information number 1 or 2, is displayed.

8. Table D in Exhibit B, which corresponds to Fig. 8 of the present application, shows various optional and numbered (in left column of Table D) advisory messages. The advisory message designated as number 1 indicates that the cutting speed may be increased to the limit value (as claimed in claim 10). Hence, when this message is displayed, the machinist is notified that the cutting speed may be increased without changing the cutting tool, and can improve the basic program to generate the final machining program that enables the machining process to perform at the highest speed allowed by the capacity of the machine (see claim 1).

The advisory message designated as number 2 advises the machinist to change the cutting tool material so that the cutting speed can be increased (see claim 11). Thus, the machinist can improve the cutting speed by changing the cutting tool material.

9. The processing procedure described in Flowchart B in Exhibit B corresponds to Fig. 5 of the present application, which is executed when the cutting tool is an end mill and the processing is performed according to conditions prescribed in Table B. In the procedure shown in Flowchart B, the spindle load, the cutting speed and the spindle rotating speed, which are machining variable values as recited in claims 7 to 9, are analyzed, and an advisory message designated as number 3 or 4 is selected under different conditions according to Table B. As shown in Table D in Exhibit B, the advisory message designated as number 3 advises the machinist to increase the cutting speed to the limit value (see claim 10), and the advisory

message designated as number 4 advises the machinist to change the cutting tool material so that the cutting speed can be increased (see claim 11).

10. The processing procedure described in Flowchart C in Exhibit B, which corresponds to Fig. 6 of the present application, is executed when the cutting tool is a face mill. The processing is performed according to conditions prescribed in Table C of Exhibit B. In the procedure shown in Flowchart C, the spindle load, the cutting speed and the spindle rotating speed, which are machining variable values as recited in claims 7 to 9, are analyzed, and an advisory message designated as number 5, 6 or 7 is selected according to conditions stated in Table C. As shown in Table D in Exhibit B, the advisory message designated as number 5 advises the machinist to increase the cutting speed to the limit value (see claim 10), the advisory message designated as number 6 advises the machinist to change the cutting tool material so that the cutting speed can be increased (see claim 11), and the advisory message designated as number 7 advises the machinist to decrease the tool diameter so that the spindle rotating speed can be increased (see claim 12).

11. The processing procedure described in Flowchart D of Exhibit B, which corresponds to Fig. 7 of the present application, is executed when the cutting tool is an end mill or a face mill that are used for finish machining. Similar to flowcharts A to C, Flowchart D also shows a procedure for analyzing the machining variable values obtained during the execution of the basic program to determine the efficiency of the machining process.

12. Flowcharts A to D in Exhibit B also describe that an advisory message is displayed. This naturally implies that a display device is used to display an advisory message. Thus, Exhibit B substantially discloses the limitation recited in claim 3.

13. Although Exhibit B does not explicitly describe a navigation information memory, it is reasonably expected that various advisory messages to be used for display purposes by different processing procedures (e.g., Flowchart A-D) are stored in a memory. Thus, Exhibit B substantially discloses the limitation of claim 4.

14. Although Exhibit B does not explicitly mention a simulation program, it is obvious to a skilled person in the art that the basic program can be executed using a simulation program, as claimed in claim 6.

15. As discussed, Exhibit B discloses the limitations of pending claims 1-4 and 7-12. Claims 13-21 recite similar limitations or a combination thereof. Therefore, Exhibit B discloses the limitations of pending claims 1-4, 7-12, and 13-21.

16. Prior to Fishman's U.S. Filing date (February 27, 1998) and prior to the filing date of the corresponding Japanese Patent application (March 24, 1998) based on which the present patent application claims priority, we worked diligently to reduce this conception to practice. We worked with the patent attorney of a Japanese patent firm between December of 1997 to the filing date of the corresponding Japanese patent application. This is evidenced by the supplemental Exhibits 1 – 4 provided herewith, where:

a. Exhibit 1 is a true copy of a letter in Japanese sent from Mazak to a Japanese patent firm on December 16, 1997.

b. Exhibit 2 is a copy of an English translation of the letter shown in Exhibit 1. In this letter, Mazak formally asked the Japanese patent firm on December 16, 1997 to prepare a Japanese patent application corresponding to a designated matter number H09-033 pertaining to the subject matter disclosed and claimed in the present US application.

c. Exhibit 3 is a true copy of a letter in Japanese, which was issued by Engineering Administration Department of Mazak on March 9, 1998.

d. Exhibit 4 is a copy of an English translation of the letter shown in Exhibit 3. This letter indicates that a draft specification under the same matter number H09-033 (as shown on low left part of Exhibit 3), which had been revised prior to March 9, 1998, by the Japanese patent firm in accordance with comments provided by the inventors at Mazak, was sent again from the Japanese patent firm to Mazak on or before March 9, 1998 for another review. The Engineering Administration Department of Mazak received the revised draft from the Japanese patent firm on or before March 9, 1998, and then delivered, on various indicated dates, the revised draft to the joint inventors, together

with the letter of Exhibit 3 on or after March 9, 1998. The Japanese patent firm provided at least two drafts pertaining to the claimed invention to Mazak from the date of December 16, 1997 to the date of March 9, 1998. In the letter, it is also indicated that a deadline for review (checking) is March 20, 1998 (last line in Exhibit 4). We, as joint inventors, reviewed at least two drafts before the Japanese application was filed with the Japanese patent office on March 24, 1998.

e. We, as joint inventors, worked together with the Japanese patent firm, during the period from December 16, 1997, when Mazak formally requested the Japanese patent firm to prepare the application, to March 24, 1998, when the application was filed with the Japanese Patent Office. We worked diligently on initial drafting, reviewing, revising, completion, and eventually filing of the application, all within the approximately three month period.

17. We hereby declare that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application and any patent issued thereon.

Date: August 04, 2004 Kenji Suzuki

Kenji Suzuki

Date: Aug. 31, 2004 Toshiyuki Muraki

Toshiyuki Muraki

Date: Aug. 27. 2004 Makoto Tanahashi

Makoto Tanahashi

Date: Aug. 27, 04 H. Yoshida

Hirokazu Yoshida